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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,021	04/15/2004	Shannon V. Davidson	064747.1017	7500

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EXAMINER	
VO, TED T	

ART UNIT	PAPER NUMBER
2191	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOmail3@bakerbotts.com
PTOmail4@bakerbotts.com

Office Action Summary	Application No.	Applicant(s)	
	10/825,021	DAVIDSON ET AL.	
	Examiner	Art Unit	
	TED T. VO	2191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/30/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the amendment filed on 06/15/2009, entered by the filing RCE on 07/29/09.

Claims 1-24 are pending in the application.

Information Disclosure Statement

2. The contents of information disclosure statement that direct to information of the communications of Applicants and Examiner (Office actions) will be considered by the Examiner. However, they are lined through because of being improper with the provisions of 37 CFR 1.98. It should be noted that the contents under 37 CFR 1.98 constitute the means of "**prior art**"; that is might use to reject a claim; the internal office communication thus cannot be a prior art. In the submitted PTO-1449 forms, **Examiner will consider these communications**.

Applicant should cite the US publications or the US filing application serial numbers of those office communications.

Response to Arguments

3. In the remarks filed on 06/15/2009, according to the applicant' submission:

> The cited references fail to teach, suggest, or disclose each and every limitation of Claim 1. For example, the cited references fail to teach, suggest, or disclose "determining an

> original subset of a plurality of nodes, the original subset comprising nodes currently unallocated to a job, each node in the plurality of nodes comprising a switching fabric integrated to a card and at least two processors integrated to the card" as recited in Claim 1. In rejecting Claim 1, the Office Action asserts that the "switching fabric" and "processors" in Claim 1 are not "patentable features." (Office Action, p. 3). Specifically, the Office Action asserts: "This element does nothing to a method for determining an original subset of a plurality of nodes; in which the method solely results with selecting a job from a job queue; and executing the selected job using at least a portion of the original subset." (Office Action, p. 3). Applicant respectfully disagrees. Contrary to the assertion that the switching fabric "does nothing," amended Claim 1 recites that the "switching fabric allow[s] node to node communication during execution of a job." With respect to the processors, amended Claim 1 recites "executing the selected job using one or more processors of one or more nodes." Therefore, the Examiner should not disregard the portion of Claim 1 that recites "each node in the plurality of nodes comprising a switching fabric integrated to a card and at least two processors integrated to the card."

Examiner discerns that Applicants require the recitation “switching fabric integrated to a card and at least two processors integrated to the card” as the whole argument in which Applicants regard as of their Invention.

The definition of “switching fabric” in Whatis: [S]witching fabric , is the combination of hardware and software that moves data coming in to a network node out by the correct port (door) to the next node in the network. The term suggests that the near synonym, switch, tends to make switching seem like a simple hardware function. Switching fabric includes the switching units (individual boxes) in a node, the integrated circuits that they contain, and the programming that allows switching paths to be controlled. The switching fabric is independent of the bus technology and infrastructure used to move data between nodes and also separate from the router. The term is sometimes used to mean collectively all switching hardware and software in a network.

The term apparently uses the woven material metaphor to suggest the possible complexity and web-like structure of switching paths and ports within a node.

The Signal Computing System Architecture (SCSA), which provides a model framework for computer telephony, uses the term. In the SCSA framework, part of the hardware model includes a Switch Fabric Controller. Asynchronous transfer mode (ATM) and frame relay are sometimes described as switching fabric technologies.

The switching fabric typically includes data buffers and the use of shared memory.

Kelly teachings meet the definition of Whatis, where within this discussion, Kelly2 shows a switch system of a combination software (See Figure 14) and the hardware (See Figure 13) that moves data between nodes in a network nodes.

See Kelly 2: sec. 3.2.1 Grammar for the descriptions of attribute nodes (nodes, ports, and edges). In an attribute node it comprises nodes, ports and edges, defined in a hierarchical manner in which a node is either of a processor or process (claimed read on this) communicating to another node via its endpoint – port. **The keyword port is sockets, network interface cards, or switch** (the claims read on this).

Thus, only not mentioned in the references differences is the terms "fabric", where under the determination of patentability, it is obvious not to produce a patentable difference. On the other hand, the description and the purposes of using the computing nodes, clusters, attribute modes does not show any difference from the definition of "switching fabric" in Whatis.

4. Since Applicants' argument are only an generic allegation without any explanation, the use of a prior art for showing of the term "switching fabric" will be combined under the obviousness. The reference of Cisco Systems, "Cisco 12012 Gigabit Switch Router Switch Fabric Cards Replacement Instructions" is applied in the combination.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Axel Keller et al., al., "Scheduling in HPC Resource Management Systems: Queuing vs. Planning" , Proceedings of the 9th Workshop on Job Scheduling Strategies for Parallel Processing, Seattle, WA, pages: 1-19, 6-2003 (hereinafter: Keller1) and "Anatomy of A Resource Management System for HPC Clusters", 2001 (hereinafter: Keller2) as multiple reference in view of Cisco Systems, "Cisco 12012 Gigabit Switch Router Switch Fabric Cards Replacement Instructions",

> See MPEP:
> 2131.01 Multiple Reference 35 U.S.C. 102 Rejections
> Normally, only one reference should be used in making a rejection under 35 U.S.C. 102. However, a 35 U.S.C. 102 rejection over multiple references has been held to be proper when the extra references are cited to:
> (A) Prove the primary reference contains an "enabled disclosure; "
> (B) Explain the meaning of a term used in the primary reference; or
> (C) Show that a characteristic not disclosed in the reference is inherent.

As per Claim 1: In Keller1, it discloses planning a job in a HPC, where it plans the jobs in job queue of the HPC. allocates the jobs that is not Keller discloses,

A method comprising:

determining an original subset of a plurality of nodes, the original subset comprising nodes currently unallocated to a job, each node in the plurality of nodes comprising a switching fabric integrated to a card and at least two processors integrated to the card (Keller1: see p. 15, last paragraph: e.g. 'the administrator establish': "*determining*", 'N defines the number of nodes which are not allocatable..': "*currently unallocated to a job*" - Keller2: See p. 15, Grammar 3.2.1, Keller2: p. 15-16: Figures 12-13).

the switching fabric allowing node to node communication during execution of a job;

selecting a job from a job queue (i.e. an execution is selected on a job queue: See title of Keller1 - See Keller2" Figures 12-13)***; and***

executing the selected job (i.e. scheduling) ***using one or more processors of one or nodes of the original subset*** (Keller1: See p. 16 [also see the Keller2 (p. 16: attribute nodes], the grouping of different dependency graphs in the HPC scheduling – the ability of nodes being interconnected by edge via communication endpoints - Keller2: the topology of nodes in Figures 15-16 used for job execution selected via endpoint ports).

Keller's references teaches an original subset of nodes (Kelly2: nodes in Figure 12), which is not executed. The subset of nodes is allocated for executing a job selectable by switch/card of ports.

However, its description does not mention the switches or cards as of *switching fabric,* argued by Applicants.

Cisco Systems shows switch fabric, switch fabric card, used as the endpoints of Route processors (RP), where a RP executes a job received from such a switch via a scheduler (see Cisco. P. 3: three bold dots and "Switch Fabric Card", and see p. 10, fabric switch).

Thus, it is obvious to an ordinary in the art to include switch fabric cards as disclosed by Cisco Systems, where those carry the user traffic received by a scheduler to the route processors (RP), into the topology of ports of computing nodes of Keller. Such inclusion would be suitable for a replacement in components in which the Keller describes the endpoints as a generic switch/network card, and Cisco systems provides the detailed the switch fabric cards. The difference is only a change in shape or ingredient of the components. The replacement would be suitable for a choice of products which are selectable in the HPC.

As per Claim 2: Keller discloses, ***The method of claim 1, wherein selecting the job comprises selecting the job from the job queue based on priority*** (See p. 3: sec. 2.1 Queuing Systems: queue priority), ***the selected job comprising dimensions not greater than a topology of the original subset*** (See p. 15, last paragraphs: refer to Threshold, and N nodes are not allocatable).

As per Claim 3: Keller discloses (refer to Keller1 reference), ***The method of claim 2, wherein selecting the job from the job queue based on priority comprises: sorting the job queue based on job priority*** (: p. 3, sec. 2.1); ***selecting a first job from the sorted job queue*** (p. 3, sec. 2.1)*;* ***determining dimensions*** (i.e. Network topology, or see Fig. 1 the axis of Available resources) ***of the first job with the topology of the original subset*** (p. 14, in Mapping, see "static" and

dynamic", and p. 15: "N"); ***and in response to the dimensions of the first job being greater than the topology of the original subset*** (See Fig. 1 and p. 15: "system wide node limit"), ***selecting a second job from the sorted job queue*** (i.e. ability of the queue systems for using free resources with waiting resource requests (in p. 3), ability of co-allocation, of grouping different dependency graphs of the queue system and planning (sec. 2.1 and 2.2)).

As per Claim 4: Keller discloses (refer to Keller1 reference) , ***The method of claim 2, wherein the dimensions of the first job are based, at least in part, on one or more job parameters and an associated policy*** (i.e. resources/against time axis as mentioned in p. 3:1-3).

As per Claim 5: Keller discloses (refer to Keller1 reference), ***The method of claim 2, further comprising dynamically allocating a job space from the original subset based, at least in part, on the dimensions of the job, wherein executing the selected job comprises executing the selected job using the job space*** (See sec. 3.2, start at p.6, and noted that the queue systems/planning has an ability to allocate job spare as using the free recourses for waiting request resources).

As per Claim 6: Keller discloses, ***The method of claim 1, wherein the plurality of nodes comprises a first plurality*** (Keller1: see node in clusters in p. 1, different dependency graphs, p. 16) ***and the method further comprises: determining that dimensions of the selected job are greater than a topology of the first plurality*** (Keller1: i.e. number N and threshold T (p. 15));

selecting one or more nodes from a second plurality of nodes (See Fig. 1, and last paragraph in p, 15), ***each of the nodes in the second plurality of nodes comprising a switching fabric***

integrated to a card and at least two processors integrated to the card (Keller2: See Grammar 3.2.1, p. 15amd Figure 13, p. 16)***;***

and adding the nodes selected from the second plurality to the original subset to satisfy the dimensions of the selected job (Keller1: See the sec. 2.1 and 2.2).

As per Claim 7: Keller discloses, ***The method of claim 6, further comprising returning the nodes selected from the second plurality to the second plurality*** (Keller1: see node in clusters in p. 1, different dependency graphs, p. 16, i.e. another job/ node is selected in queuing)

As per Claim 8: Keller discloses, ***The method of claim 1, further comprising; determining that a second job that was executing on a second subset of the plurality of nodes has failed*** (Keller1: See last paragraph in p. 15, or the description of System Wide Node Limit (i.e. SWNL), for the case when the user requests a number of nodes T+N greater than the threshold T)***; adding the second subset to the original subset; and adding the failed job to the job queue*** (the SWNL defines automatically the number N is not allocatable notes).

As per Claims 9-16: See rationale addressed in the rejection of Claims 1-8, respectively.

As per Claims 17-24: See rationale addressed in the rejection of Claims 1-8, respectively.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted T. Vo whose telephone number is (571) 272-3706. The examiner can normally be reached on 8:00AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Y. Zhen can be reached on (571) 272-3708.

The facsimile number for the organization where this application or proceeding is assigned is the Central Facsimile number 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTV
October 6, 2009

/Ted T. Vo/
Primary Examiner, Art Unit 2191